



Converting interest rate Show the interest rates as the	e to decimal: would appear in the formula as r. (Divide by 100,	, or move decimal 2 spaces to the left)
a) 13%	b) 2.5%	c) 0.5%
Relating Units of Time	2	

Simple interect

Remember that there are 365 days or 52 weeks or 12 months in 1 year. Express each as a fraction of a year.

- a. 26 weeks b. 8 months c. 400 days
- An ______is an item (real estate, coins, antiques, stocks, etc.) ٠ that is purchased with the hope that it will create income in the future.



- A ______is the act of giving money to someone in exchange ٠ for future repayment of the money plus interest.
- ______is the amount of money earned on an investment or paid for a loan. •

Simple interest is a quick method used to calculate the amount of money earned on an investment or charged on a loan.

SIMPLE INTEREST FORMULA:	I = Prt	I = interest P = the principal (initial amount of investment/loan) r = the interest rate, in decimal form t = the length of time in years
To determine the total amou	int of an invest	tment/loan after interest is calculated and included, use:

	stillent/loan after interest is calculated and included, use.
A = P + I	A = total amount of investment/loan
	P = the principal (initial amount of investment/loan)
	I = interest

Example 1

Calculate the simple interest and final amount of a \$675 investment at 7.25% over 2 years.

Name:

Name: _____

Example 2

Calculate the interest and final amount of a \$750 investment at $4\frac{3}{4}$ % over 30 months.

Example 3

Find the principal invested at 5% if after 10 years if it earned \$650 in interest.

Example 4

Determine how long \$1000 was invested at 6.15% if at the end of the investment \$153.75 was earned.

Example 5 What rate of simple interest is needed to get \$7000 to grow to \$10000 in 5 years?

Name: _____

Compound Interest

INVESTIGATE: Comparing Simple and Compound Interest



How do the graphs compare:

- 1. How does compound interest grow relative to simple interest? _____
- 2. Identify the type of growth for each:
 - simple interest is _____
 - compound interest is ______

Compounding means generating earnings from previous earnings.

Compound interest is the amount of money earned on a principal investment/loan PLUS the amount of money made on the interest of the investment/loan.



Get an explanation @ www.investopedia.com/video/play/what-is-compound-interest/#axzz2AGUGPaa5

A **compounding period** is the length of time over which compound interest is calculated.

Common compounding periods are:

Term	NUMBER OF TIMES PER YEAR
annually	
semi-annually	
quarterly	
bi-monthly	
monthly	
semi-monthly	
bi-weekly	
weekly	
daily	



Name: _____

$i = \frac{r}{C}$ $r = $ the annual interest rate	COMPOUND INTEREST FORMULA:	$A = P (1+i)^n$	A = the final amount of investment/loan i = the interest rate per compounding period	
			$i = \frac{r}{C}$	r = the annual interest rate
C = # of compounding periods/year				C = # of compounding periods/year
P = the principal			P = the principal	
<i>n</i> = the number of compounding periods			<i>n</i> = the number of	compounding periods
n = Ct $t = the # of years$			n = Ct	<i>t</i> = the # of years
C = # of compounding periods/year				C = # of compounding periods/year

Example 1

Calculate the amount of money a \$400 investment would make if it were invested at 5%, compounded quarterly for 2 years.

Example 2

Determine the amount of money invested at 2.45% for 3 years, compounded monthly if the final amount of the investment is \$3500.

Example 3

- A \$10 000 loan must be paid back in 5 years. It was borrowed at a rate of 3.9%, compounded semi-annually. Find its value at the end of the investment.
- b. How much interest must be paid on the loan?



Name:

Using the TVM Solver

A Time Value of Money (TVM) Solver is a program used to Perform Financial Calculations.

- **1.** Turn on your calculator.
- **2.** Since you are dealing with money, two decimal places are appropriate.

Press the **MODE** key. Cursor down one, and right three, to select 2 decimals places. Press **ENTER**.

The results of all calculations will now be displayed with two decimal places.

 a) Press the APPS key. The applications list will appear:



b) Select 1: Finance... by pressing **ENTER** The TVM solver menu will appear:





- c) Press ENTER to select the TVM solver. There may be some numbers left in the TVM solver from a previous user. Just replace these numbers with yours.
- **4.** What do all the variables mean?

N = total number of payments (# of years x # of times compounded)

- 1% = interest rate as a percent (\star DO NOT CONVERT TO A DECIMAL \star)
- PV = present value or principal

PMT = amount of each payment (use ZERO since no additional payments other than the original one)

FV = future value

- P/Y = payments per year (use same number as C/Y even though there is only one original payment)
- C/Y = compounding periods per year

PMT: END BEGIN to select when payments are made \rightarrow ALWAYS USE END

Name: _____

CALCULATING ON THE TVM SOLVER

Example 1

Esteban and Suzanne want to take their sons on a vacation to Florida in 1 year. They invest \$2000 in a Bond that pays 6% interest per year, compounded monthly. How much money will they have for their trip?

Use the cursor keys and number keys to enter the numbers where they belong.

 $N = 12 \leftarrow it is invested for 1 year x compounded 12 times$ $I\% = 6 \leftarrow interest rate is 6\%/year$ $PV = 2000 \leftarrow the amount invested (principal)$ $PMT = 0 \leftarrow always use for zero for single deposits$ $FV = ___ \leftarrow the amount at the end of the investment$ $P/Y = 12 \leftarrow same number as below$ $C/Y = 12 \leftarrow since it is compounded monthly, there are 12 compounding periods per year$



To solve (find the payment),

- i. scroll up to FV
- ii. press ALPHA, and then ENTER

Notice that the payment is negative.

The TVM Solver distinguishes between money received (+) and money given (-). The negative value makes sense since each payment is money that Esteban and Suzanne give up.

: Esteban and Suzanne will have \$2123.36 in one year.

When using the TVM Solver:

- PV is negative because you pay money out when you invest a principal
- FV is positive because you receive money when an investment matures

Example 2

Tatiana wants to buy a surround-sound system for her TV. It costs \$1100. Her account pays 1.8% interest per year, compounded monthly. How long will it take her save enough money? She has \$700 in her account right now.



Name: _____

The Effects of Changing Conditions on Loans & Investments

INVESTIGATE:

Use the TVM Solver to investigate each of the following.

1. CHANGING THE TERM

Principal (PV)	Interest Rate (I%)	Length of Investment (N)	Compounding Period (C/Y)	Amount (FV)	Total Interest (FV — PV)
i. \$10 000	4.5%	5 years	12		
ii. \$10 000	4.5%	10 years	12		
iii. \$10 000	4.5%	20 years	12		
iv. \$10 000	4.5%	25 years	12		

a. How does changing the term affect an investment? Explain.



2. CHANGING THE INTEREST RATE

F	Principal (PV)	Interest Rate (۱%)	Length of Investment (N)	Compounding Period (C/Y)	Amount (FV)	Total Interest (FV — PV)
i.	\$10 000	3.5%	10 years	12		
ii.	\$10 000	4.6%	10 years	12		
iii.	\$10 000	7.5%	10 years	12		
iv.	\$10 000	9.4%	10 years	12		

a. How does changing the interest rate affect an investment? Explain.

Name: _____

3. CHANGING THE COMPOUNDING PERIOD

F	Principal Interest Rate (PV) (1%) (N)		Length of Investment (N)	Compounding Period (C/Y)	Amount (FV)	Total Interest (FV - PV)
٧.	\$10 000	5%	10 years	2		
vi.	\$10 000	5%	10 years	4		
vii.	\$10 000	5%	10 years	12		
viii.	\$10 000	5%	10 years	24		

a. How does changing the compounding period affect an investment? Explain.

4. Summary

a. What conditions would be best when investing money? Why?

b. How would changing these same conditions (length of loan/ investment, interest rate and compounding period) affect a loan?



Name:

Savings Alternatives

Watch **Banking Basics** @ https://www.youtube.com/watch?v=yTP8_6Jhe4Q and answer the following.

- 5. Savings Accounts are designed to help you save money and pay interest if you have a ______ amount of money in the account. With some savings accounts, interest rates increase when you save certain amounts of money.
- 6. Financial institutions provide the following services
 - internet banking and bill payments
 - <u>foreign exchange services</u>
 - wire transfers
 - <u>credit cards</u>
 - <u>mortgages or loans</u>

amount of money in the account.

- <u>retirement planning</u>
- investment advice

Watch:

How Do Banks Create Money from Nothing? https://www.youtube.com/watch?v=Hg_1iXbIjFQ Corrupt Canadian Banking System https://www.youtube.com/watch?v=axS-QdUkMqk

OII UNE MAIN



Name:

Compare types of bank accounts @ www.fcac-acfc.gc.ca/eng/resources/toolcalculator/banking/index-eng.asp

Financial Consumer Agency of Canada Agence de la consommation en matière financière du Canada

Financial Consumer Agency of Canada www.fcac-acfc.gc.ca Help Home Contact Us canada.gc.ca Français Search Institution Account name BMO Bank of Scotiabank Montreal (Young Adult CIBC **RBC Royal Bank** (Getting There (CIBC Advantage for (RBC Leo's Young Savings Program for Youth) TD Canada Trust Account (Youth Account) Discount Program) Savers Account) Information Youth) Package Monthly fee \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 details Minimum monthly balance (for _ monthly fee to be waived)1 Maximum number of 30 Unlimited 15 20 Unlimited Inmonthly transactions branch Selfserve² Extra Bill payment In-_ ____ _ \$0.65 (see Notes column) transaction handling fee branch fees Self-_ _ \$0.65 _ _ serve Features Free certified cheques _ _ _ _ _ Free money orders & bank drafts Free stop payments Commission-free traveller's 1 cheques (one-signature) Free personalized cheques³ _ _ _ _ _ Overdraft protection⁴ _ _ 1 Cheque returns ./ ✓ (online image ✓ (image only) ✓ (cheque image on only) paper statement or online) Discounts on annual rental of safety deposit boxes Plan available for spouse below _ qualifying age Free access to ABMs of THE _ _ ✓ (see Notes ✓ (TDCT ABMs in EXCHANGE® network or some Canada and TD Bank column) other ABMS ATMs in US) E-mail money transfers \checkmark 1 ✓ (one per month, included in monthly transaction limit) Up to 20 Free access to PC One additional free \$1.00 handling fee Notes⁵ chequing/savings applies for each in-Financial ABMs debit per automated accounts can be pay deposit branch bill payment included in one paid by cash or monthly fee cheque drawn on another financial institution (does not apply if paid by account debit)

Data last updated: June 2010

Canadä

1. The minimum balance must be maintained throughout the month for the monthly fee to be waived.

 Self-serve transactions include withdrawals, transfers of funds, bill payments and balance inquiries at an ABM or by Internet or telephone. They also include cheque writing, Interac® direct payments and pre-authorized debits. Network access (Interac®) ABM fees are not included, unless otherwise specified. CIBC's, Royal Bank's and Scotiabank's selfserve balance inquiries do not reduce the number of monthly transactions permitted.

3. The number of cheques provided varies between financial institutions, but cheque orders usually contain from 100 to 200 cheques.

4. If overdraft protection is included, it will be subject to credit approval

5. Monthly statements are included, unless otherwise specified.

Name: _____

Using the comparison chart on the previous page as reference, answer each of the following.

- 1. Which bank(s) would be the best for someone who makes more than 25 transactions per month? Why?
- 2. Which bank(s) make it more difficult to keep track of the cheques you write? Why?
- 3. Which bank(s) would best for someone who does a lot of travelling outside of Canada? Why?
- 4. Which bank(s) would be the best for someone who has accounts at other banks? Why?
- 5. The interest rates on savings accounts generally range from _____% to _____%.

Example 1

Jay's bank charges \$5.95 for up to 10 transactions per month plus 75¢ for each additional transaction. In November, he made eight transactions; in December, he made 23 transactions. Determine the service charges deducted from Jay's account balance each month.

Name: _____ Investing Alternatives

Watch Financial Terms 101 @ www.youtube.com/watch?v=cKitZQQM8As and complete the following.

Stocks	
SLUCKS	yesterday after cheeking your
•	a small piece of in a company to the stocks?
٠	stockholders share in any the company makes
•	can make money by (i) selling when the price is than you paid, or (ii) receiving
Bonds	
•	you lend money to for a set period of time
٠	when bond matures, the money is paid back in full plus for each year of investment
GICs	
•	stands for
•	also known as a
٠	you put money away for specified length of time in order to earn
Mutua	al Funds
٠	a pool of money to be invested in a group of that you couldn't buy on your own
When	Investing, know
1.	
2.	
3.	- AAAAA

All investments carry some level of risk. Generally, the greater the risk, the greater the potential return (or loss). Some investments increase in value while others lose value.





One way to accumulate wealth is to invest regularly over a long period of time. This takes advantage of the power of compound interest.

Watch The Pros and Cons of Saving and Investing http://www.youtube.com/watch?v=2DBdWeTxXeU&feature=relmfu OR What are the Basic Types of Investments http://www.youtube.com/watch?v=WaWTRqzRTqM&feature=related

Name: _____

Match each of the following types of investments with it's definition.

- Mutual Fund
- ➡ Blue Chip Stock
- ➡ Registered Retirement Savings Plan (RRSP)
- ➡ Canada Savings Bond (CSB)

- ➡ Registered Education Savings Plan (RESP)
- Volatile Stock
- ➡ Guaranteed Investment Certificate (GIC)

¥	 an investment set up to save for a child's education
SIS	 income from the plan grows tax-free
Ц Ц	 an investment that is set up to provide income after retirement.
ΥË	 when money is invested, the investor can claim a deduction on their
8	income tax that year
	 contributions accumulate interest tax-free
	 when money is taken out, it is taxed as income
	 a financial product issued by the Bank of Canada
	 offers competitive rate of interest and guarantees a minimum interest rate
	 can be purchased with both simple and compound interest features and are redeemable at any time
	a type of investment sold to individuals by banks or trust companies
	 usually, interest is paid at a fixed rate and cannot be cashed before a specified date
	 type of investment where people pool their money together to buy stocks, bonds, and other assests
¥	 managed by an investment company that charges a fee
RIS	 stock of a well-established and financially sound company that has
5	demonstrated its ability to pay investors in both good and bad times
Щ. Т	 usually less risky
HIGH	a riskier stock that could have a better payout to investors

Example 1

a. Complete the chart for each type of investment.

Investment	Low-Risk	Medium-Risk	High-Risk
opening a savings account			
buying units in a mutual fund			
buying shares in an oil company			
buying a GIC from a bank			
buying a hectare of land			
investing in a friend's invention			
buying shares in a bank			

b. From the list in part (a), which investment might provide the greatest return in the shortest time? Which investment might provide the greatest loss in the shortest time?

Name: _____

Credit Card Quiz

How Much Do You Know?

Círcle the correct answer.

Last month, your credit card balance was zero. This month, your statement shows that you made a \$500 purchase. If you can pay off only \$400 by the due date indicated on your statement, you will be charged interest only on the \$100 left to pay.

True False

2. You are carrying a \$1,000 balance on your credit card: \$800 for purchases you made two months ago, and \$200 for cash advances you took this month. Your credit card agreement says your annual interest rate is 16% for purchases, and 20% for cash advances. When you make a \$300 payment, the issuer will apply it to your purchases, because they occurred first.

True False

3. All credit card issuers have the same rule: if you pay off your credit card bill in full by the due date indicated on your statement, you won't be charged interest on any new purchases that appear on that statement

True False

4. You won't pay interest on a cash advance as long as you pay your credit card bill in full by the due date indicated on your statement.

True False

5. All credit cards have the same grace period.

True False

6. Most credit card issuers have formal policies in place to protect cardholders against unauthorized transactions on their accounts.

True False

7. If you frequently pay your credit card just a couple of days after the due date, this won't affect your credit rating.

True False

8. Credit rating agencies will charge you a fee for sending you a copy of your credit report by mail.

True False

9. Your January statement, dated January 31, shows that you owe \$550 because of a purchase you've been carrying over since October. Your next credit card payment is due on February 21. If you pay \$550 on February 13, you won't owe anything more.

True False

10. A credit card issuer can increase the administration fee it charges for a cash advance without telling you in advance.

True False

Name: _____

Credit Card Quiz

How Much Do You Know?

Watch Video \rightarrow Credit Card Debt http://www.youtube.com/watch?v=Vz05A6cP6Iw

1. Last month, your credit card balance was zero. This month, your statement shows that you made a \$500 purchase. If you can pay off only \$400 by the due date indicated on your statement, you will be charged interest only on the \$100 left to pay.

FALSE

It is a common myth to think that you will pay interest only on the amount left to pay (also called the outstanding amount) on your credit card bill. If you don't pay in full by the due date indicated on your credit card statement, you lose the interest-free period on your new purchases, and:

- You will be charged interest on the \$400 you paid off from the transaction date (or from the posted date) until the day you made the \$400 payment; and
- You will be charged interest on the \$100 outstanding from the transaction date (or the posted date) until the date you pay this amount in full.
- 2. You are carrying a \$1,000 balance on your credit card: \$800 for purchases you made two months ago, and \$200 for cash advances you took this month. Your credit card agreement says your annual interest rate is 16% for purchases, and 20% for cash advances. When you make a \$300 payment, the issuer will apply it to your purchases, because they occurred first.

FALSE

Credit card issuers can apply the minimum payment any way they want. However, if you pay more than the minimum amount, your credit card issuer has to apply the amount over the minimum payment in one of two ways:

- 1. to the part of your balance with the highest interest rate, and then in descending order to the rest of your balance (next highest interest rate to lowest), or
- 2. proportionally to all interest rate categories of the balance.

Keep in mind that the credit card issuer can charge different interest rates for different types of transactions. For example, for purchases, your interest rate could be 18%, but for cash advances and balance transfers, it might be 21%. Check your credit card agreement or disclosure statement, because these interest rates must be outlined in the agreement or statement.

3. All credit card issuers have the same rule: if you pay off your credit card bill in full by the due date indicated on your statement, you won't be charged interest on any new purchases that appear on that statement

TRUE

You will never have to pay any interest if:

1. you always pay the full amount owing on your credit card by the payment due date;

AND

2. you don't use your credit card to take cash advances or make cash-like transactions, such as a wire transfer or money order.

However, if you are carrying a balance, you will pay interest on the outstanding amount until your balance is paid in full

4. You won't pay interest on a cash advance as long as you pay your credit card bill in full by the due date indicated on your statement.

FALSE

Cash advances do not benefit from the interest-free period (only purchases do). In other words, you must pay interest on cash advances from the day you obtain them until you pay them off in full.

Name: _____

5. All credit cards have the same grace period.

FALSE

For federally regulated financial institutions the grace period on new purchases has to be a minimum of 21 days but can be longer.

The grace period is the time between the statement date and the payment due date, and is provided by the credit card issuer. The grace period usually varies between 21 and 26 days and is a component of the interest-free period.

6. Most credit card issuers have formal policies in place to protect cardholders against unauthorized transactions on their accounts.

TRUE

Visa, MasterCard, and American Express have what they call "Zero-liability policies" that protect their cardholders from unauthorized transactions. If you find an unauthorized transaction on your account, let your credit card issuer know immediately. They will investigate the matter and reimburse you in most cases.

7. If you frequently pay your credit card just a couple of days after the due date, this won't affect your credit rating.

FALSE

Each month, your credit card issuer reports to the credit rating agencies in Canada whether you are paying on time. If you are late in making credit card payments, it will reflect negatively on your credit history and could seriously affect your credit rating. A tarnished credit rating could make it hard for you to get credit in the future, and you might end up paying a higher interest rate on loans you do obtain.

8. Credit rating agencies will charge you a fee for sending you a copy of your credit report by mail.

FALSE

If you request it be sent to you by mail, a copy of your credit report is free of charge from the two credit rating agencies in Canada (Equifax and TransUnion). You should obtain a copy of your credit report each year to ensure its accuracy (this does not affect your credit rating in any way).

You may be charged a small fee for a more detailed report.

9. Your January statement, dated January 31, shows that you owe \$550 because of a purchase you've been carrying over since October. Your next credit card payment is due on February 21. If you pay \$550 on February 13, you won't owe anything more.

FALSE

Since you've been carrying a balance since October, you owe interest on that amount until the day you pay it off in full. If you wait until February 13 to make a payment, you will still owe interest that accrued between the dates of January 31 (your statement date) and February 21 (your payment date). This interest charge will appear on your February statement

10. A credit card issuer can increase the administration fee it charges for a cash advance without telling you in advance.

FALSE

A credit issuer regulated by the federal government must give at least 30 days notice before it can make the following changes to your credit card agreement (this list is not exhaustive):

- increase in fees for various transactions
- change in your fixed interest rate
- decrease in the grace period
- increase or decrease in the minimum payment

There are other changes the credit issuer can make without telling you in advance (these require a 30-day notice after the change has been made). Contact FCAC for more details.

Name: _____ Credít Cards

Credit cards are issued by

- •
- _____

Compare types of credit cards @

www.fcac-acfc.gc.ca/eng/resources/toolCalculator/creditCard/indexeng.asp

Using the comparison chart on the right as reference, answer each of the following.

- 1. What do you notice about the interest rates charged on credit cards compared to those of savings accounts?
- 2. What is the compounding frequency on overdue accounts?
- 3. Does a credit card cost anything if the balance is paid in full by the due date?
- 4. What kinds of things do companies offer to entice you to sign up for their credit card?

Issuer		BMO Bank of Montreal	СІВС	Scotiabank	TD Canada Trust
Car	d name	BMO SPC AIR MILES MasterCard	Classic VISA Card for Students	Scene VISA card for Students	TD Green VISA Student
Minimu income r	m personal required (\$)	Not specified	0	Not specified	Not specified
Minimum credit limit (\$)		500	500	500	500
	Purchases ¹	19.50	19.99	19.99	19.99
Annual interest	Cash advances ² (%)	19.50	21.50	19.99	21.50
rates	Balance transfers ² (%)	19.50	21.50	19.99	21.50
Minimu (\$ c outstand	m Payment or % of ing balance)	2% of the outstanding balance shown on your account statement, or \$10	Greater of \$10 or 2.1% (plus the greater of overlimit or past due amount)	3%	\$10 plus interest and fees
Annual	First card (\$)	Free	Free	Free	Free
fees	Extra cards (\$)	Free	N/A	Free	Free
		Re	wards and benefits ³		
1	Issuer	BMO Bank of Montreal	СІВС	Scotiabank	TD Canada Trust
	Rewards details	SPC discounts and Air Miles ⁴		Points toward entertainment rewards	
	Travel and/o vacation	r 🗸			
	Cash back				
	Groceries	~			
Rewards	Merchandise	e √		\checkmark	
	Vehicle rebates	\checkmark			
	Charitable donations	\checkmark			
	Health care	✓			
	Financial products	\checkmark			
	Travel accident insurance	1	~		✓
	Trip interruptior or cancellatior insurance	n √	I		
	Travel medical insurance	1	1		1
Benefits	Rental vehicle insurance	1			
	Flight delay insurance	· 1			
	Baggage insurance	1			
	Purchase protection and extende warranty	d	~		~

 $^{\checkmark}$ This option is offered for an additional fee.

Data last updated: January 2012

5. How do you think these student cards might be different from other cards?

2. Unless otherwise specified, for cash advances or balance transfers, interest is calculated from the date funds are borrowed. There is no grace period.

3. This is not a complete list of all rewards and benefits offered by credit card issuers. For more details about other rewards and benefits that are offered for additional fees, check with the credit card issuer.

 The SPC card (partnership with Student Pricing Card) gives the cardholder discounts at various merchants (for example, retail stores and travel providers). For more details http://spccard.ca/.

If the grace period does not apply, the interest on purchases is calculated from the date of purchase of the item or, in some cases, the date the item is posted to your account.

Name: ____

Example 1

The information found on the back of Ahmad's monthly statement for a credit card issued by his bank is shown.



- a. A statement is issued to Ahmad on the 8th of each month. On what date will the payment be due?
- b. On September's statement, Ahmad has a balance of \$86.36. Determine his minimum payment.
- c. On October's statement, Ahmad has a balance of \$462.18. Determine his minimum payment.
- d. If it takes three days to process his payment, what is the latest date that Ahmad can pay October's bill and not be overdue?
- e. If interest is calculated and compounded daily, determine the daily interest rate. Round your answer to 4 decimal places.
- f. Calculate the interest charged on October's bill if it is paid in full five days after the due date. Ahmad paid his September bill in full. He made one new purchase for \$462.18 on September 15.

Name: _____

Obtaining A Vehicle

Watch Video → https://www.youtube.com/watch?v=kmpXoSGmSho

THE FIRST DECISION: New or Used?

The advantages of both are compared in the chart below. Keep in mind that although there are more advantages listed on the new side, the pros on the used side are big ones and in many cases can be bigger advantages.

ADVANTAGES											
New	VS	Used									
Made to Order		Price									
 It's Not Used - never been in an accimistreated, no wear and tear, etc. 	ident or 🛛	 Depreciation - the steepest decline is right away; this has happened by the time a 									
 Warranty - without paying extra 		used vehicle is purchased									
Latest Gizmos		 Insurance Rates - generally, the older the car. the better the rate 									
 Safety - vehicle safety laws force manufacturers to make safer cars 		 Choice - may be able to get options that are no longer offered by the dealer on new 									
Higher Fuel Efficiency and Lower Em	nissions	cars									
 Financing - better rates are offered because cars have not yet depreciat 	ted										
 Maintenance - reduced maintenance the beginning; sometimes free maintenance is offered for an amountime or mileage 	e at int of										
 Legwork - once you have chosen the vehicle, the work is done 	e										

Taken from David Gluckman, Car & Driver Magazine, May 2009.

THE SECOND DECISION: Cash or Finance or Lease?

To **FINANCING** a car, a person would take out a loan to pay for the car and then pay the loan back with interest over a specified period of time. When financing a car a down payment must be made.

A car **LEASE** is essentially a long-term rental. The buyer makes a monthly payment for the term of the lease and at the end of the term must return the vehicle to the dealer or buy the vehicle outright by paying a buyout price (which is set when the buyer agrees to the original lease). When leasing a car a down payment must be made.

Name: _____

Example 1

You are going to trade in your 15-year-old car and would like to purchase a new sedan. The cost of the sedan, including all extra charges is \$26 595. The prices is subject to HST.

a. What would the total price of the sedan if you were to purchase it with cash?

- b. What would the total price of the sedan if you made a down payment of \$3500 and finance the rest? To finance, you are offered a 4-year loan at 5.9%.
- c. What would the total price of the sedan if you lease it for \$329/month plus taxes, for a lease term of 48 months? The total residual value (buyout) of the sedan is \$19 800 at the end of 4 years.

- d. Which option has the lowest cost?
- e. Why would a person choose to finance a car? The monthly charge will be \$665.83.
- f. Why would a person choose to lease a car?



Name: _____

Operating A Vehicle

Brainstorm the types of expenses in each category.

FIXED EXPENSES	VARIABLE EXPENSES
(ownership expenses)	(operating expenses)
are those that remain the same	are those that change
from one month to the next.	in amount or frequency.

VEHICLE PREVENTATIVE MAINTENANCE GUIDE		D.		U.L.						00 km
SERVICE, and WHEN NEEDED (Kilometers)	5,000	Every 10,00	Every 25,00	Every 50,00	Freny 75.00	Every 100	Every 125,0	Every 150	Fvery 175.0	Every 200,0
LUBRICATION, OIL & FILTER (Every 5,000 KM or 3 Months)	\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	\checkmark
AIR FILTER - INSPECT/REPLACE (Every 5,000 KM)	\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	\checkmark
DRIVE AXLE BOOTS & SEALS (Inspect every 5,000 KM)	\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	1
BATTERY INSPECTION (Every 5,000 km)	\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	\checkmark
P.C.V. VALVE (Replace as needed / Inspect every 10,000 KM)		1		1		1		1		\checkmark
BRAKE INSPECTION (Every 10,000 KM)		1		1		1		1		\checkmark
TIRE ROTATION & INSPECTION (Every 10,000 KM)		1		1		1		1		\checkmark
TIRE BALANCE (Every 25,000 KM / or every 12 months)			\checkmark	\checkmark	√	1	\checkmark	1	\checkmark	\checkmark
CLEAN & ADJUST REAR BRAKES (As required, every 10,000 KM)		1		1		1		1		\checkmark
BRAKE SYSTEM FLUID FLUSH (Every 50,000 KM or 2 years)				\checkmark		1		1		\checkmark
WIPER BLADES (Replace every 12 months)			\checkmark	\checkmark	\checkmark	1	\checkmark	\checkmark	\checkmark	\checkmark
WHEEL ALIGNMENT/INSPECTION (Every 25,000 KM / or 12 months)			\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	\checkmark
FUEL FILTER REPLACEMENT (Every 50,000 KM or 2 years)				\checkmark		1		1	2	\checkmark
TRANSMISSION FLUSH (Every 50,000 KM or 2 years)				1		1		\checkmark		\checkmark
FUEL INJECTION SERVICE (Engine Decarbonization) (Every 25,000 KM or 12 months)			\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	\checkmark
MAINTENANCE TUNE-UP (As required)						1				\checkmark
POWER STEERING FLUSH SERVICE (Every 25,000 KM or 12 months)			\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	\checkmark
AIR INTAKE SERVICE (Every 25,000 KM or 12 months)			\checkmark	1	\checkmark	1	\checkmark	1	\checkmark	\checkmark
COOLANT SYSTEM FLUSH (Every 50,000 KM or 2 years)				1		1		1		1
REPLACE BELTS & HOSES (Every 50,000 KM or 3 years)				1		1		1		\checkmark
TIMING BELT (Every 100,000 KM / most vehicles)						1				\checkmark
DRIVE CLEAN (Emission testing every 2 years)				1		1		1		1
SHOCKS & STRUTS (Inspect every ^{80 000} km as required)					\checkmark			1		

Name:

CAR INSURANCE IS MANDATORY IN ONTARIO.

A *deductible* is the amount of an insurance claim that you must pay.

Collision coverage pays for losses caused when an insured car is involved in a collision with another object, including another car, or rolls over.

Comprehensive coverage pays for losses, other than those covered by collision or upset, such as falling or flying objects and vandalism

What factors can reduce insurance costs?

- <u>age of car</u>
- make of car
- <u>driving record</u>

- <u>drivers education</u>
- age of driver
- sex of driver

Car insurance can be paid with one payment or instalments (which could be quarterly, monthly, etc.).

Example 1

Ralf is 19 and single, and he owns a 7-year-old mid-sized car. He called several insurance agents and the lowest quote he received was \$2620/year. There are two payment options: he can pay the insurance premium in full once a year, or he can make monthly payments of \$230.

a. Calculate the annual cost if he chooses monthly instalments.

b. Calculate the difference between the two payment options.

c. Suggest reasons why Ralf might choose each option.



Name:

FUEL CONSUMPTION is the amount (in litres) of fuel that a car uses to travel 100 km.

Example 2

Darryl's truck has a 76-L fuel tank and a fuel efficiency rating of 11.8 L/100 km.

- a. What does the fuel efficiency rating on Darryl's truck mean?
- b. How far can Darryl's truck travel on one tank of fuel?
- c. How much fuel would his truck use on a 450 km trip?

Example 3

Find the total cost, prior to HST, of servicing a vehicle that requires 2 headlights at \$28.75 each, an exhaust pipe at \$130 and a muffler and tail pipe at \$55.50. the time required for servicing the vehicle is 1.5 hours. The rate the service station charges for labour is \$65/hour.



Name: Practice on the TVM Solver

Use the TVM Solver to answer the following questions.

1. Maria deposited \$1000 into an account paying interest at 4.2% per year, compounded monthly. How much will her investment be worth in 5 years?

- 2. Keenan invested \$2000 in a term deposit that pays 6% per year, compounded semi-annually.
 - a. How long will it take for Keenan's investment to double in value?

b. Would a \$10 000 investment double in value in the same length of time? Provide evidence of your answer.

3. Which will be worth more at the end of 15 years: \$3000 invested at 6% per year, compounded monthly, or \$3500 invested at 6.5% per year compounded semi-annually?







N= 1%= PV=

PMT=



Name:

Car Project

Part 1: Buying vs Leasing

Financing:

If you choose to buy a car, you can either pay for the whole thing right away (many people don't have that much all at once), or you can make a down payment, and finance the rest through your bank, or car company. You will be making monthly payments to pay off the rest, but of course you will be paying interest. Because you are paying interest, the final amount will be more than if you had paid the whole thing right away.

Leasing:

Leasing is like long-term renting. Usually for a 3 to 5 year term. At the end of the term, you either have to give the car back, or you may have the option to buy it.

- 1) State which option (buying or leasing) would be better in the following scenarios, and why?
- a) A 30 year old business man who drives around all day from client to client.
- b) A college student who doesn't have much of a down payment, and a very limited amount to spend per month.
- c) An auto mechanic, who enjoys doing all of his own repairs.
- d) Newlyweds, who want a sports car for now, but are planning on starting a family in a few years and will need a bigger car.
- e) Jeremy wants to put in a huge new stereo system and change the paint job.
- 2) Make a bill for a Honda Civic with the base price \$19100 and the costs of additional options of \$4879.
- Base price: \$ _____

Cost of all options: \$ _____

Other costs (freight, PDI) \$1000.00 (estimate)

GST 6%: \$_____

PST 8%: \$ _____

Total:	\$						

Name:

Financing:

3) a) Suppose you have \$5000 to use as a down payment on the car you are financing. Subtract that from the price of your car. This is the amount you will need to finance.

b) Assume your bank is giving you a rate of 2.3% compounded monthly, and paid over a 5 year term. Use the following formula to calculate the monthly payments:

$$Payment = \frac{F(t)}{1 - (1 + i)^{-14}}$$

n = #(years) =
$$i = \frac{rate}{\#} =$$

P=

c) At the end of the 5 year term, how much will you have paid in total? (Don't forget to include the \$5000 down payment.)

Total amount = Monthly payment x 60 + 5000

d) How much have you paid in interest?

Leasing:

- 4) You can lease a car for \$368 monthly with \$0 down for 60 months. How much have you paid after the 5 years?
- a) In your lease agreement you are allowed 25000 km per year for free. After that you are charged \$0.08 per km. After your 5 year term, you drove a total of 140000 km. How much do you owe?

MBF 3C1 Part 2: New or Used Car

Name: _____

- 5) State whether it would be better to buy a new or used car, and why, based on the following scenarios.
 - a) Sue lives in Ontario, but got a 1 year job contract in BC. She needs a car there, but wants to sell it before she moves home again.
 - b) Eric has his heart set on a certain high performance car. Only a few hundred are made each year, and he is very particular about which options he wants.
 - c) Jackie commutes about 100km each way to work, and is terrified about her car breaking down.
 - d) The Reed family is interested in purchasing an extra vehicle for doing errands.
- 6) One of the major disadvantages of buying a new car is that the car depreciates in value very fast. Suppose the car cost you \$25 000, calculate how much you could sell it for in one year if the depreciation rate is 30%.
- 7) One of the major disadvantages to buying a used car, is you may not know what you are getting. If you were going to buy a used car, what are 5 important questions you might want to ask the previous owner?

Name: _____

Part 3: Costs associated with owning a vehicle

There are many costs associated with owning a vehicle:

Insurance

8) Here are some of the major factors insurance companies consider when giving an insurance quote:

Age, Gender, Marital Status, Geography, Driving Violations, Vehicle Type, Accident Claims, Credit Rating, Occupation

a) Based on the factors that are considered, describe a scenario of someone who might have a very high insurance quote.

Gasoline

- 9) If the size of the gas tank of your car is 40 L and the gas costs \$1.02/L, how much would it cost to fill this tank?
- a) The consumption of fuel for your car is 5.9L/100km for city driving and 5.3L/100km for highway driving. Suggest why you might get better fuel efficiency on the highway.
- b) Assume you decided to drive to Montreal from Toronto on a weekend to visit your friend. If the distance is 600km, primarily highway driving, how many liters of gas would you need to get there?
- c) How much would this cost, based on the above price of gas?

Other Expenses

- 10) Oil change costs approximately \$35 for every 5000km. If you drive an average of 25000km per year, how much will you spend on oil changes?
- 11)License plate stickers cost approximately \$110 for every two years. To obtain this sticker your car must pass an emissions test. Why do you think every car has to pass an emissions test?